

Enhancement of UTP E-Library System

by

Azilah Hashim @ Shahar

**Dissertation submitted in partial fulfillment of
the requirement for the
Bachelor of Technology (Hons)
(Information Technology)**

JUNE 2005

**Universiti Teknologi PETRONAS
Bandar Seri Iskandar
31750 Tronoh
Perak Darul Ridzuan**

CERTIFICATION OF APPROVAL

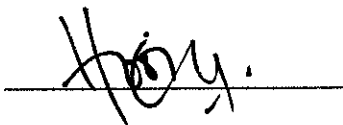
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A project dissertation submitted to the
Information Technology Programme
Universiti Teknologi PETRONAS
in partial fulfillment of the requirements for the
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(INFORMATION TECHNOLOGY)

Approved by,



(Ms. Michelle H.C. Beh)

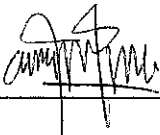
UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

June 2005

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgments, and that the original work contained herein have not been undertaken or done by unspecified sources or person.



AZILAH HASHIM @ SHAHAR

ABSTRACT

At present, there is no specific system for UTP's students and staff to renew book, reserve book and notify them the due dates of books borrowed and enable them to receive automatic due date alert. So, instead of going to library to do manually, users can browse it no matter where they are. The objective of development the UTP E-Library system is to present the benefits of the online system. The research will justify whether the online system really can benefit the user and how will user gain advantages from it. To narrow down the scope further, this study or research will be focusing on the functionalities of the E-Library system which are renewal book and reservation or booking books in advance. The users may be able to renew the books and reserve the unavailable book online through the system. Besides that, the users may check their loan books and reservation current status. Moreover, users may be also provided with automatic due date alert and overdue remainders. The system interface will be created using various tools such as HTML, Macromedia Dreamweaver MX, and PHP language. The development process will take count on the Waterfall Methodology with the systematic phase. This includes step-by-step phases starting with requirement definition, system and software design, implementation and unit testing, and lastly, integration and system testing. E-Library system aims to propose a feasible and efficient online library system that can give benefits to the user

ACKNOWLEDGEMENT

Alhamdulillah be to ALLAH, the most Gracious and Most Merciful.

One of the greatest pleasures of writing a report is acknowledging the efforts of many people whose names may not appear on the cover, but without that hardworking cooperation, friendship and understanding, producing this report could have been impossible.

First, the author would like to dedicate her special gratitude to her Final Year Project supervisor, Miss Michelle H.C Beh, for being so generous and helpful in guiding me all through this project.

Also, the author would like to thanks to the UTP Librarians and the management that had been giving the author a good cooperation in gathering the information about the current library system. Besides that, the technologist, Mr. Muhamad had also assists the author in part of findings and researches regarding to the library system.

A bunch of thanks to Mr. Mohd Noor Ibrahim, FYP Committee and all other party who involved directly or indirectly, for their assistance and precious time spend over her.

Lastly, but not least, the author wants to express her thankfulness towards her family especially to her beloved family (Hajjah Zaleha Binti Abdul Manap, Haji Hashim @ Shahr Bin Yazid, Azman, Zarina, Abu Zar and Shahrul Azri Bin Muhamad Saleh) and of course, all of my wonderful housemates who collectively create a work culture that support and nurtures my continued learning process and personal development.

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ABBREVIATIONS AND NOMENCLATURES

UTP	- Universiti Teknologi PETRONAS
FYP	- Final Year Project
IT	- Information Technology
E-Library	- Electronic Library
OPAC	- Online Public Access Catalog
HTML	- Hypertext markup Language
IRC	- Information Resource Center
INSTEP	- Institute Teknologi Petroleum PETRONAS
PERMATA	- PETRONAS Management Training Services
WAN	- Wide Area Network

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Students are increasingly expected to use electronic resources while at university. Studies were undertaken to determine the level of use of this type of resource, how students feel about various issues surrounding electronic resources and whether attitudes change dependent upon subject studied.

The Electronic Library allows students to access many of the library's database, books, journal, newspaper and other recourses from anywhere at anytime. So, instead of going to library to search the information from the Intranet OPAC, students can browse it no matter where they are. Because the Electronic Library is web-based which is student can browse at anytime and anywhere.

1.1.1 Identifying library services

Libraries services refer to facilities, which are provided by library for the use of books and dissemination of information for the need and meet the users' requirement. The well known existing library services are cataloguing, classification, circulation services, reservations, renewal, new arrivals, current contents, current awareness service, selective dissemination of information, indexing and abstracting, reference service, selective dissemination of information, indexing and abstracting, reference service, document delivery, inter library loan, externally purchased database, CD-ROM databases, access to other library catalogues, access to online databases, internally published newsletter, reports and journals, bibliographic services, and so on. All these services have changed its mode to extend with web environment. Use of the Web for delivery of distance learning is finding an audience in the current 'just-in-time' education environment, where customized programs and convenient professional development opportunities are valued

by today's lifetime learners. In addition, students in traditional facilities-based courses are asking for the convenience of access to course resources, information, and communication with their instructors via internet. Library reference services are being adapted to take advantage of the possibility of Internet access to information systems and database mining tools.

1.2 PROBLEM STATEMENT

1.2.1 Problem Identification

There are several problems that lead to the development of this e-library system. The following are the problems the users are facing:

“How can I renew a book?”

The main problem is the students have difficulty to renew their books at their convenience. If they want to renew their books, they must go to the library counter and also must bring along the books. Thus, the books renewal is done manually. This constraint creates some inconveniences for users, especially the students as their hostel is located far from the library.

“How can I reserve a book?”

Another problem is the users cannot borrow the book that he or she needs because it is already on loan. The user has to go to the library to search the book using the OPAC system. If the book is unavailable or on loan, the user has to reserve it manually by filling a form. However, there is a probability of losing or misplacing the form since there is no proper system for book reservation. Therefore, the proposed system should allow the user to make a reservation or booking in advance. In other words, users may join waiting lists for books which are currently unavailable. The users will be notified to collect the book at the counter.

“How can I know the due date of my book, is there any notification to remind me?”

Users always unaware about the date return for the books borrowed. Different books may have a different due date and it may confuse the user. Therefore, it must have an alternative to notify or alert them about the due dates for each of the books borrowed.

1.2.2 Significant of the Project

The proposed solution for the problem is to develop an online library system for the easily access by the users to renew materials 24 hours a day at their convenience. The users will be able to renew their books through the online system. However, users may only renew their books once. If they attempted to renew the same book for the second time, a pop up message ‘renew failed, you are already renewed’ will be displayed on the screen.

By having this online library system, users may access it anywhere at anytime and it may allow users to view the status of the book either its on loan or on shelf through the OPAC. Besides that, users may reserve the book in advance if the book is on loan or unavailable. This reservation will hold the book for a week for the users to collect it from the counter.

Furthermore, the users can also check how many books have they loan and the due dates. This system will notify the borrowers the due dates of books borrowed and enable them to receive a notification.

1.3 OBJECTIVE AND SCOPE OF STUDY

The objective of this project is to enhance the current library system that allows users:-

- To register for an account and users may update their profile online
- To renew book easily
- To check the status on the quantity of books borrowed and due dates
- To reserve a book in advance and to check the queue position for the book reservation
- To notify the users the due dates of books borrowed and enable them to receive automatic due date alert.

The scope of this study and its related researches is the development of the online renewal book and reservation book in advance. This study focuses on how the online system can improve the function of the current library system. The research focuses on how the new database will be integrated to the online system and also focuses on how the student may be accessing to the online library system through the Internet or Intranet.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

A library is an organized collection of items of various formats (books, journals, videos, CD-ROMs, etc.) along with the services required to make them available to a given user group or groups. It is not a collection of programming routines, at least in this context.

An electronic library is a library consisting of electronic materials and services. Electronic materials can include all digital materials, as well as a variety of analog formats that require electricity to use. For example, video tapes are an analog format that requires electronic equipment to view. Thus the term "electronic library" encompasses all the material that can be held by a "digital library", and is therefore more inclusive. It is, however, out of style.

To effectively provide the resources to distance education students, library services must be accessible outside of the physical library. Today most academic libraries use the Web as the preferred delivery medium. However, other familiar methods such as a toll free telephone should not be overlooked. [1] Libraries of all sizes and types are embracing digital collections, although most libraries will continue to offer both print and digital collections for many years to come. New purchases and purchases of journals, magazines, and abstracting and indexing services are heavily weighted toward digital, while digital books (e-books) are only beginning to become a presence in library collections.

To encourage students' use of the library, and in particular of its electronic resources, the author needs to understand what factors encourage students to seek out information in the library setting. Students who express an interest in learning about the library's electronic resources will be more likely to have higher self-efficacy.

Renew Books Online developed to assist easy way to student to renew their book via online system. Student may renew books or check on what library materials that student has on loan and when they are due back, even when the library is closed. [3]

The goal of this research is to provide information that librarians can use to make important decisions about collections, services, and product design.

2.1 THE ADVANTAGES OF ELECTRONIC SOURCES

Here are some of potential advantages for an online library system:

- Organization - Materials arranged by standardized classification system
- Quality of materials - Resources purchased based on selection criteria
- Assistance - Help from library staff can improve quality of research
- Print exclusivity - Some information can only be found in print copies
- Availability of historical items - Libraries keep and preserve materials
- Collection management - Libraries follow a planned program for acquisitions. [5]

Students are increasingly expected to use electronic resources while at university. Student can access the library ease anyway at anytime.

- 83% of students surveyed felt that using this source saved them time, and found it relatively easy to use
- Two-thirds of those surveyed stated that if the CD-ROM was busy, they would wait for it to become free rather than use the print tool
- 85% would choose this version over print.
- It was easy to use
- It saved time in library searching. [7]

Electronic information sources offer today's students different opportunities from their predecessors. [8] Details the advantages of networking for the user as being, the information needed can be delivered from the most appropriate source to the user; the user can re-specify his or her needs dynamically, the information is obtained when it is wanted, so becomes "just in time" rather than "just in case"; the user selects only the information needed to answer the specific question and, finally, the information is only stored should the user wish. Electronic information can therefore provide a number of advantages over traditional print based sources.

These advantages include the fact that electronic information sources are often faster than consulting print indexes, especially when searching simultaneously, and they are straight forward when wishing to use combinations of keywords. They open up the possibility of searching multiple files at one time, a feat accomplished more easily than when using printed equivalents. Electronic resources can be printed and searches saved to be repeated at a later date; they are updated more often than printed tools. One main advantage, especially to distance learners or those with limited time to access the library, is their availability from outside the library by dial-up access.

CHAPTER 3

METHODOLOGY / PROJECT WORKS

3.1 PROCEDURE IDENTIFICATION

The enhancements of the UTP's current library system are that the users can now renew and reserve book via online system, on condition that they are connected to the Internet. One of the methodologies followed to ensure that desired result to be achieved is the Software Development.

3.1.1 Software Process

There are various types of methodologies that the author can use to approach this project. Choosing the right methodology is a crucial step to helping the author attain her ultimate goal, the first choice for the management process. The author has decided that the waterfall methodologies can be applied to this system. The author chose the Waterfall Methodology because it shows a systematic approach of attacking a given problem. At the very top of the waterfall, the author initiates the project. Once completed, the author precedes one step lower to the next phase that is planning. Following planning, the author has analysis, design, and implementation, which is the very bottom of the waterfall. Figure 3.1 demonstrates the concept of the Waterfall:

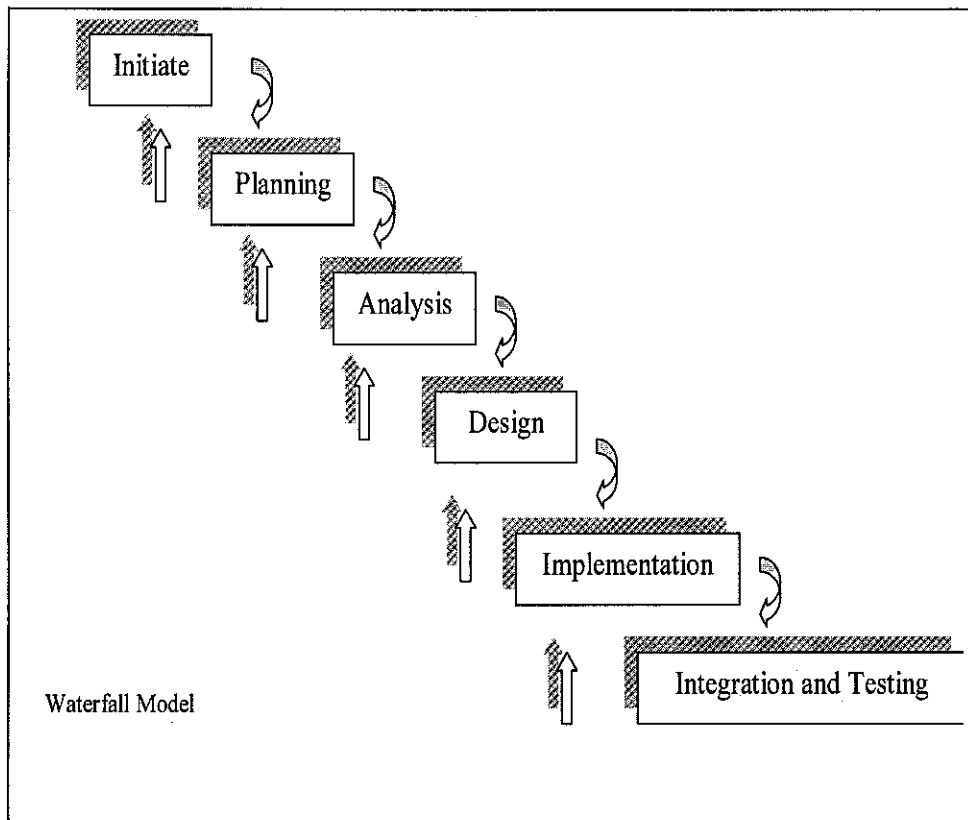


Figure 3.1 - Waterfall iterative development cycle

- Initiate

In this phase, the author is trying to verify the portion of the system requirement.

- Planning

During this phase, the author is trying to understand the users and their needs, as well as how the author addresses those needs. They will conduct a few interview sessions with users and librarian in gathering the data and information.

- Analysis

This is the analysis phase that the author will gather information needed to give an approaching into the product, its functionality, its design and its implementation procedure.

- Design

Once analysis is ready, the author has a clear description of what functions the software system must provide. The information needed is used to decompose the system into modules and describing what each module is intended to do and the relationship among the modules.

- Implementation

During this implementation stage, the software is coded and the system is built to test the solutions that have been developed during the design phase.

- Integration and testing

The author brings all the phases together into a special testing environment, then checks for errors.

3.2 DEVELOPMENT TOOLS

For the development and construction of the UTP E-Library System, the following set of hardware and software had been used.

1. Managerial / Documentation Purpose Tools

- Microsoft Word
 - Used in the preparation of the weekly report and preliminary report.

2. Module Development and Construction Tools

- Macromedia Dreamweaver
 - For the web development and HTML editing
- MySQL
 - MySQL is used to create the database necessary for the module. A database is an organized collection of information that a computer uses to select and display data. Databases can help organize and enhance the site content.

- PHP
 - Server-side scripting language designed used for the web system.
- Development and Construction Hardware
 - The hardware that being used to develop the E-Library System are listed below:

Module:

Microsoft Windows XP Professional

Version 2004

Service Pack 1

Computer:

Pentium IV

256 MB of Ram

3.3 STORYBOARD DEVELOPMENT

3.3.1 Proposed Module Story Board Development

Before the actual development and construction of the module can take place, the storyboard is first drawn. The storyboard shows how the interface of the module will look like (button, banners, pictures, text, etc), the flow between the interfaces and serve as a guideline for the construction of the module itself.

UTP E-LIBRARY SYSTEM																
<table border="1"><tr><td>HOME</td></tr><tr><td>OPAC</td></tr><tr><td>Renew</td></tr><tr><td>Reservation</td></tr><tr><td>Status</td></tr><tr><td>My Account</td></tr><tr><td>Logout</td></tr></table>	HOME	OPAC	Renew	Reservation	Status	My Account	Logout	<table border="1"><tr><td colspan="2">Introduction of E-Library system</td></tr></table> <table border="1"><tr><td>USER ID</td><td><input type="text"/></td></tr><tr><td>PASSWORD</td><td><input type="password"/></td></tr><tr><td colspan="2"><input type="button" value="LOGIN"/></td></tr></table> <p>Sign Up as New Member</p>	Introduction of E-Library system		USER ID	<input type="text"/>	PASSWORD	<input type="password"/>	<input type="button" value="LOGIN"/>	
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Introduction of E-Library system																
USER ID	<input type="text"/>															
PASSWORD	<input type="password"/>															
<input type="button" value="LOGIN"/>																

Figure 3.2 – Main page module

The first page of this system is its main page. There are pictures of the UTP library located in this page. As an introduction to the users, there is a brief background or description of the UTP library. At the bottom of the page, there is a login button. If users have registered, they may go into the login page directly. Meanwhile for those who have not registered yet, they must select the sign up form for new registration.

UTP E-LIBRARY SYSTEM																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px 5px;">HOME</td></tr> <tr><td style="padding: 2px 5px;">OPAC</td></tr> <tr><td style="padding: 2px 5px;">Renew</td></tr> <tr><td style="padding: 2px 5px;">Reservation</td></tr> <tr><td style="padding: 2px 5px;">Status</td></tr> <tr><td style="padding: 2px 5px;">My Account</td></tr> <tr><td style="padding: 2px 5px;">Logout</td></tr> </table>	HOME	OPAC	Renew	Reservation	Status	My Account	Logout	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 60%; padding: 2px 5px;">First Name</td><td style="width: 40%;"></td></tr> <tr><td style="padding: 2px 5px;">Last Name</td><td></td></tr> <tr><td style="padding: 2px 5px;">NRIC</td><td></td></tr> <tr><td style="padding: 2px 5px;">Date of Birth</td><td></td></tr> <tr><td style="padding: 2px 5px;">Email Address</td><td></td></tr> <tr><td style="padding: 2px 5px;">Contact No</td><td></td></tr> <tr><td style="padding: 2px 5px;">User Type</td><td></td></tr> <tr><td style="padding: 2px 5px;">Address</td><td></td></tr> <tr><td style="padding: 2px 5px;">User ID</td><td></td></tr> <tr><td style="padding: 2px 5px;">Password</td><td></td></tr> <tr><td style="padding: 2px 5px;">Re-enter Password</td><td></td></tr> </table> <div style="text-align: right; margin-top: 10px;"> <table border="1" style="display: inline-table; margin-right: 20px;">SEND</table> <table border="1" style="display: inline-table;">RESET</table> </div>	First Name		Last Name		NRIC		Date of Birth		Email Address		Contact No		User Type		Address		User ID		Password		Re-enter Password	
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Contact No																														
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Re-enter Password																														

Figure 3.3 – Sign up or registration module

For the users who have not registered yet, they have to enter the Sign Up button in the first module or go to MY ACCOUNT, click on new account to get into registration module as shown in Figure 3.2. The users must fill up all the required details. They have to enter a valid email address which they can check new incoming emails immediately. The library management will send the due dates notification through this email. For the user type field, users must choose their own profile. Currently, UTP library has four types of profiles which are undergraduate, postgraduate or lecture or executive, non-executive or technician and part-timer or others. Each profile will have a different privilege for example the quantity of the book they can borrow and the duration of the loan.

UTP E-LIBRARY SYSTEM																							
<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">HOME</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">OPAC</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Renew</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Reservation</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Status</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">My Account</div> <div style="border: 1px solid black; padding: 2px;">Logout</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">First Name</td><td>Azilah</td></tr> <tr><td>Last Name</td><td>Hashim @ Shahr</td></tr> <tr><td>NRIC</td><td>820112105186</td></tr> <tr><td>Date of Birth</td><td>12 January 1982</td></tr> <tr><td>Email Address</td><td>azieelah@yahoo.com</td></tr> <tr><td>Contact No</td><td>0192856387</td></tr> <tr><td>User Type</td><td>Postgraduate</td></tr> <tr><td>Address</td><td>V4D G3</td></tr> <tr><td>User ID</td><td>IT2333</td></tr> <tr><td>Password</td><td>*****</td></tr> <tr><td>Re-enter Password</td><td>*****</td></tr> </table> <div style="text-align: right; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">Update</div> </div>	First Name	Azilah	Last Name	Hashim @ Shahr	NRIC	820112105186	Date of Birth	12 January 1982	Email Address	azieelah@yahoo.com	Contact No	0192856387	User Type	Postgraduate	Address	V4D G3	User ID	IT2333	Password	*****	Re-enter Password	*****
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User ID	IT2333																						
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Re-enter Password	*****																						

Figure 3.4 – Edit or update user profile module

For the users who have already registered, this module is for the users who want to edit or update their profile. The users have to click on My Account and click on drop down menu, Update. The users may view their own profile and edit their profile. After edit their profile, click on the update button, and the system will update the user's profile immediately.

UTP E-LIBRARY SYSTEM							
HOME	<table border="1"><tr><td>User ID</td><td></td></tr><tr><td>Password</td><td></td></tr><tr><td colspan="2"><div>Login</div></td></tr></table>	User ID		Password		<div>Login</div>	
User ID							
Password							
<div>Login</div>							
OPAC							
Renew							
Reservation							
Status							
My Account							
Logout							

Figure 3.5 – Authorization module

The users have to insert the user name and password correctly to login into user profile. The user ID is actually a unique ID which owned by each user. If the authentication is successful, the system will show the user details.

UTP E-LIBRARY SYSTEM

[HOME](#)
[OPAC](#)
[Renew](#)
[Reservation](#)
[Status](#)
[My Account](#)
[Logout](#)

Items loaned: 2

Item ID	Item Title	Author	Due Date	Renew
23333	PHP	azie	30/4/05	<input type="checkbox"/>
11111	mySQL	ali	30/4/05	<input type="checkbox"/>
				<input type="checkbox"/>

Renew

Figure 3.6 - Status module and renewal book

This status module will list down all the books borrowed by the users. This module will display the item ID, item title, the author name, due date and also check box to renew book. Users may renew their book on this status module by clicking in the check box and click on the renew button. The main purpose of having this module is to let users view their own status. The users may know the quantity of the books they have borrowed and the number of books they can borrow. Besides that, the users may alert the due dates of each book.

UTP E-LIBRARY SYSTEM																														
HOME	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Items reserved: 2</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Delete</th> <th style="width: 15%;">Item ID</th> <th style="width: 20%;">Title</th> <th style="width: 15%;">Author</th> <th style="width: 20%;">Reserved Date</th> <th style="width: 20%;">Queue Position</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>23334</td> <td>Buss</td> <td>Abu</td> <td>1/5/05</td> <td>2</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>11112</td> <td>Account</td> <td>ahmad</td> <td>1/5/05</td> <td>2</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <div style="text-align: right; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">Delete</div> </div>						Delete	Item ID	Title	Author	Reserved Date	Queue Position	<input type="checkbox"/>	23334	Buss	Abu	1/5/05	2	<input type="checkbox"/>	11112	Account	ahmad	1/5/05	2	<input type="checkbox"/>					
Delete							Item ID	Title	Author	Reserved Date	Queue Position																			
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Reservation																														
Status																														
My Account																														
Logout																														

Figure 3.7 – Reserve module

This module will list down all the reserved books. The system will display the delete function, where the users may delete the item ID when they want to cancel the book reservation. The module provides the queue position to inform the users the availability of the reserved book. The book is available to be collected at the counter if the queue position is '1'. The main purpose of having this reserved module is to let their reserve status.

If the users wish to search for any books or items, they may click on the OPAC button. This OPAC button will link to the Internet OPAC. The OPAC website will invoke in a different window. The OPAC system will provide the book or item ID as a reference for the user. The users need to insert the book or item ID when doing the reservation.

UTP E-LIBRARY SYSTEM							
HOME	<table border="1"><tr><td>USER ID</td><td>IT2333</td></tr><tr><td>Item ID</td><td></td></tr><tr><td colspan="2"><div>Send</div><div>Reset</div></td></tr></table>	USER ID	IT2333	Item ID		<div>Send</div> <div>Reset</div>	
USER ID		IT2333					
Item ID							
<div>Send</div> <div>Reset</div>							
OPAC							
Renew							
Reservation							
Status							
My Account							
Logout							

Figure 3.8 – Reservation Form module

The reservation form allows users to reserve books in advance or to join waiting lists for books currently unavailable. The book to reserve must depend on the nearest date due. When the users enter the place reservation button, the system will confirm the reservation and update the records in the database. The reserved module will automatically refresh the reserve status.

CHAPTER 4

RESULT AND DISCUSSION

4.1 INTRODUCTION

This chapter discusses the result of the study that had been conducted and the development of the UTP E-Library system. In this discussion, it is hoped that more data and information regarding the development of an E-Library system can be put into light.

4.2 FINDINGS

4.1.1 Interview

In the analysis phase, a series of interview has been conducted to gather all the information. As a developer, the author needs to get the opinions from user's perspective and their feelings about the current state of the library system.

UTP Information Resource Centre (IRC) was established in July 1997 as a support centre for the academic activities of the university. Housing an approximately 120,000 volumes of items, the collection comprises of wide varieties of printed and non-printed materials ranging from books, periodicals, in-house reports, audiovisuals, etc.; to an expanding range of electronic resources such as CD-ROMs and online databases. With intent focus on the field of engineering and technology, IRC aims to provide adequate and up-to-date information resources to cater the increasing demands of the clientele which has different levels of information needs either for researches, teaching or learning environments. In line with IT development, IRC is committed to incorporate high-tech and up-to-date IT infrastructure. At present, the new centre at Kompleks Canselor is equipped with integrated library system known as Basis TechLib to promote efficient information retrieval thus enables users to explore not only resources at IRC as well as from all PETRONAS Group-wide Resource Centers.

To date IRC has approximately 120,000 volumes of collections. These collections are catalogued and classified using Library of Congress standards i.e. Library of Congress Subject Headings (LCSH) and Library of Congress Classification Scheme (LCCS). IRC is planning to acquire sufficient resources to cater the increasing demands of the projected 7000 students by the year 2010. By then the collections will grow to approximately 300,000 volumes to meet the standard set by Persidangan Perpustakaan Negara dan Perpustakaan Akademik (PERPUN), the national monitoring body for academic libraries.

The interviewee said that the current library system uses the BasicTechlib (Open Text) for storing all the data. There are four core components in the library systems which are Acquisition, Cataloging, Serial, and Circulation.

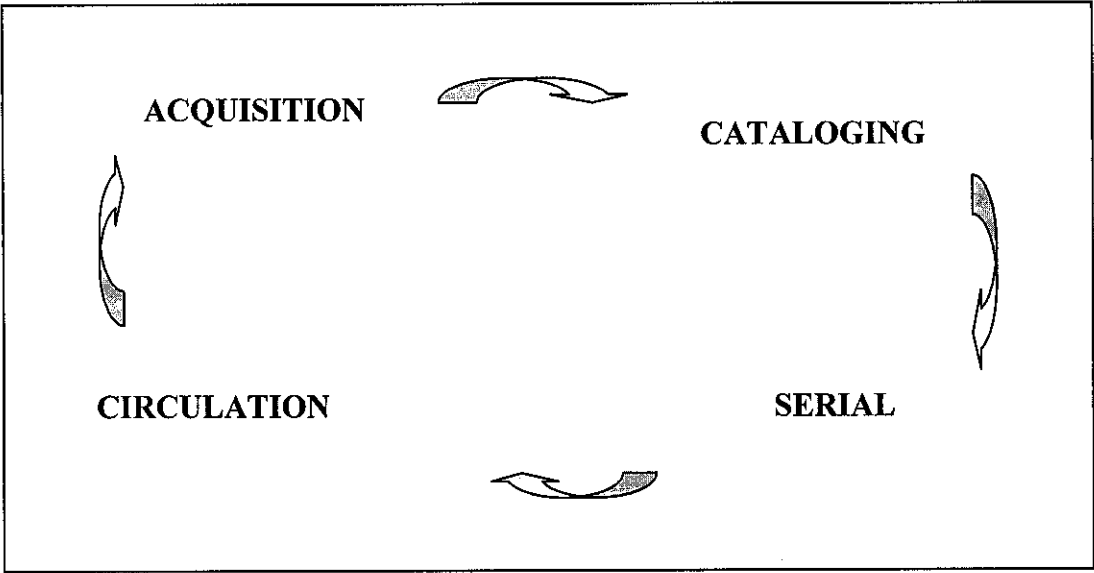


Figure 4.1 – UTP Library data structure

Once the librarian has done with the cataloging, all the data inserted will be stored the database server which is located at PETRONAS Bangi Data Centre (PERMATA). Figure 4.2, database server and web server for PETRONAS branches are centralized at the PERMATA. These two servers will connect to the Wide Area Network (WAN) and

distributed the system to the entire PETRONAS braches, for instance, UTP Information Recource Center and Akademi Laut Melaka (ALAM).

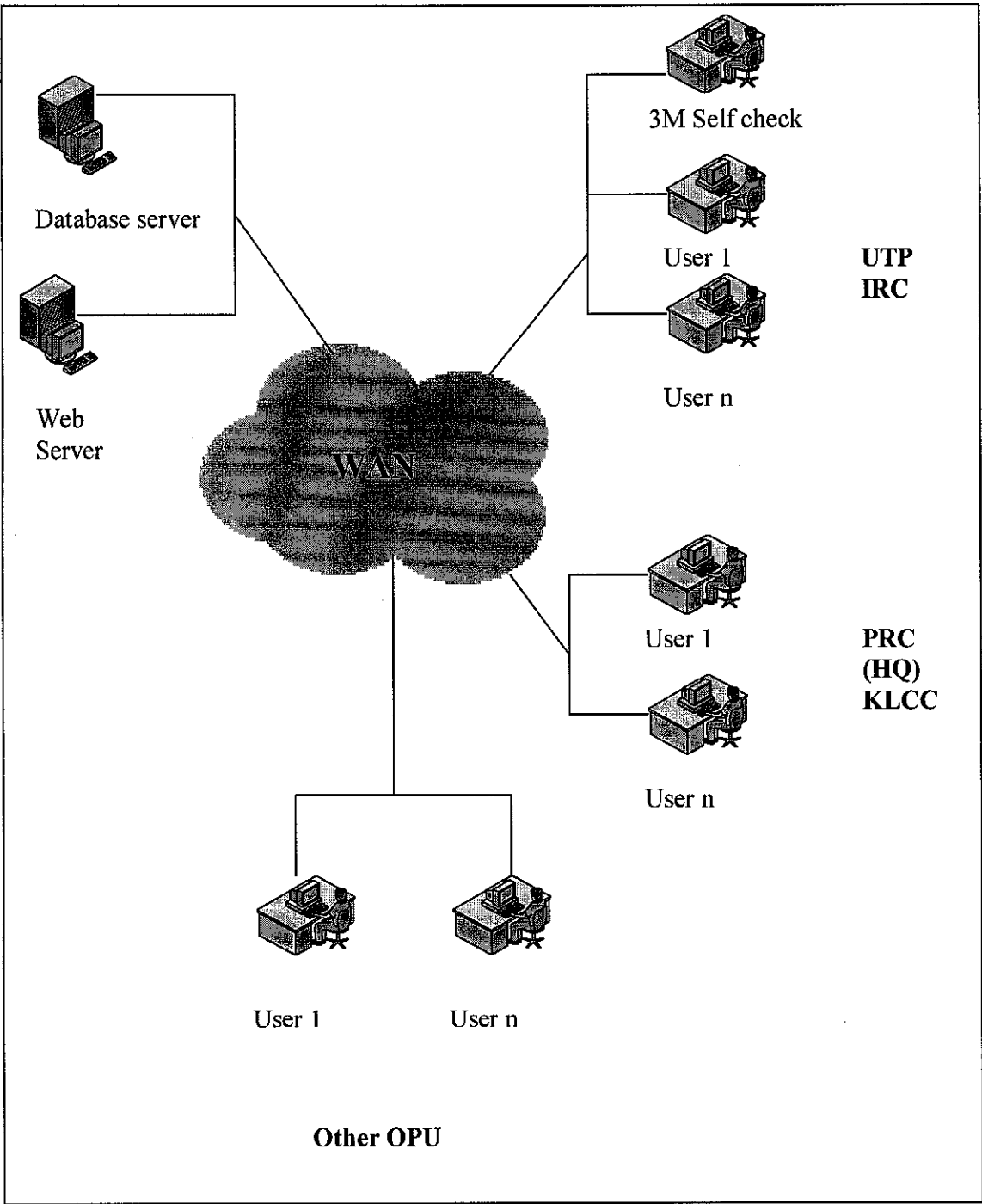
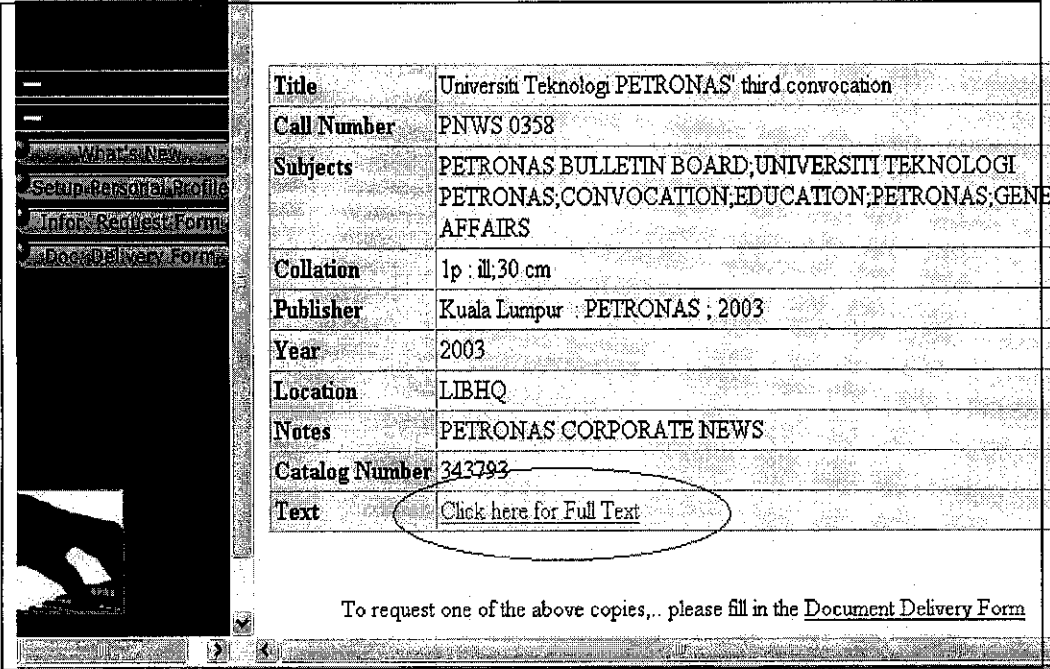


Figure 4.2 – Library System Structure at UTP

In UTP library, there have two types of Online Public Access Catalog (OPAC), which are Internet OPAC and Intranet OPAC. As shown in Figure 4.3, there is Intranet OPAC that available in UTP library. The OPAC system is integrated with other PETRONAS libraries where a user may be able to search materials form all those libraries. However, user may also choose to search from a particular source only. This OPAC system is able to show the status of the materials either it on shelf or loan. The difference between the Internet OPAC and Intranet OPAC is that the Internet OPAC is not full text while the Intranet does. The full text means that the system may be able to show the source directly from website itself. However, this Intranet OPAC service is only available in the UTP library and can only be fully access by lecturers and staff. By having this E-Library system, users may be able linked to the Internet OPAC and they will be able to search the materials online through the system.



Title	Universiti Teknologi PETRONAS' third convocation
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Collation	1p : ill; 30 cm
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Location	LIBHQ
Notes	PETRONAS CORPORATE NEWS
Catalog Number	343793
Text	Click here for Full Text

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Figure 4.3 – search output using the Intranet OPAC

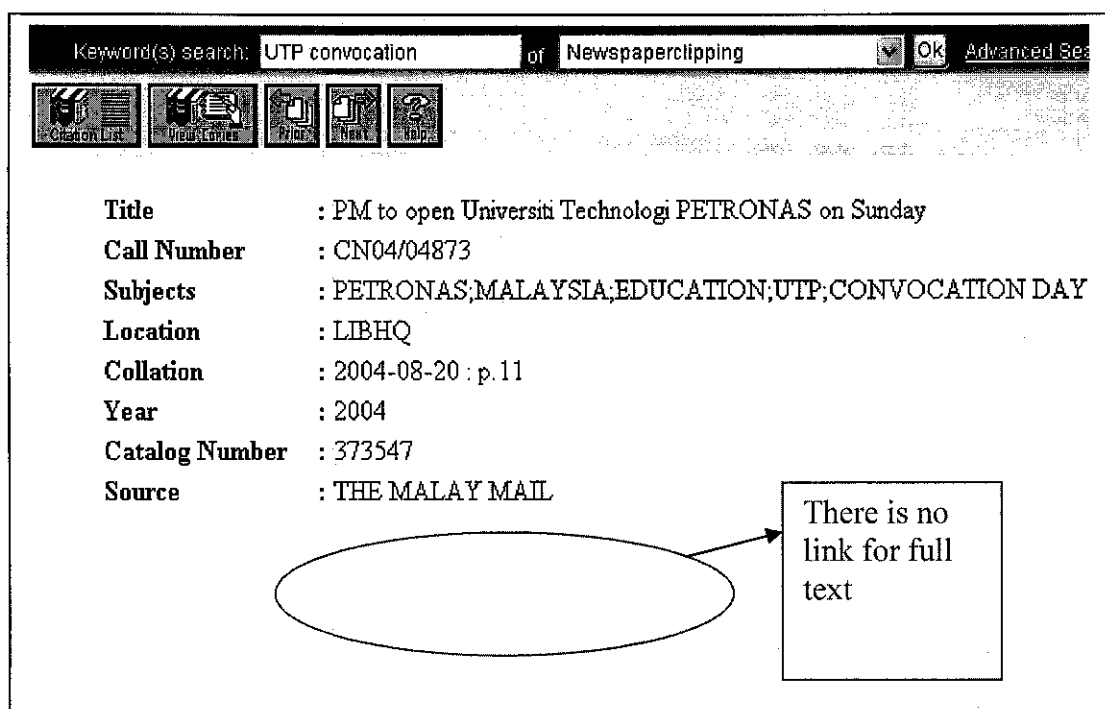


Figure 4.4 – search output using the Internet OPAC

As stated in the earlier chapter, there are four types of profile and they have different privileges such as quantity of books that can be borrowed and the duration. This privilege is given only to students and staff of UTP. Number of items that can be loaned, types and duration differ according to category of membership as follows:

PATRON TYPE	TYPE OF ITEMS	ITEMS PER LOAN	OVERDUE FINE
Undergraduate	Open shelf AV Materials (except videotape & audiocassette)	6 for 2 weeks	RM 0.20 per item per day
Graduate Tutor Academic Staff Executive	Open shelf AV Materials Journals	10 for 1 month 2 weeks 2 days	RM 0.20 per item per day
Non-executive Technician	Open shelf AV Materials	4 for 2 weeks	RM 0.20 per item per day
Temporary Staff	Open shelf	2 for 2 weeks	RM 0.20 per item per day

Table 4.1 – UTP library’s user or profile privileges

The renewal book process is done manually whereby the user has to go to the counter to ask for renewing a book. The user has to give the ID number and the system will verify the user ID and list down all the book or items borrowed by the users. If the book is available, meaning that the book is not renewed or reserved from other users, the user may renew the book. Otherwise, user must return back the book. Users may renew their book only once, if the users have already renewed the books, the system will pop up a message 'renew failed, you are already renewed' or 'renew failed, this book already reserved'.

The current library system allow user to borrow a book manually. User has to go to the counter to borrow the book manually. User has to give the matrix card to verify the user ID. If the user ID is not in the system, it needs to be registered. Then the materials can only be checked out for the user.

4.2.2 Questionnaire

As many as 50 sets of questionnaire have been distributed among lecturers and students. Overall, the questionnaire asked are mainly to capture user view of current library system and how they feel towards having a new system to replace this. The proposed system will be focusing on the functionalities of the E-Library system which are renewal book and reservation or booking books in advance. The users should be able to renew the books and reserve the unavailable book online through the system.

Question 1 – 5

1. *How often do you use the Internet OPAC in your village/lab/office?*

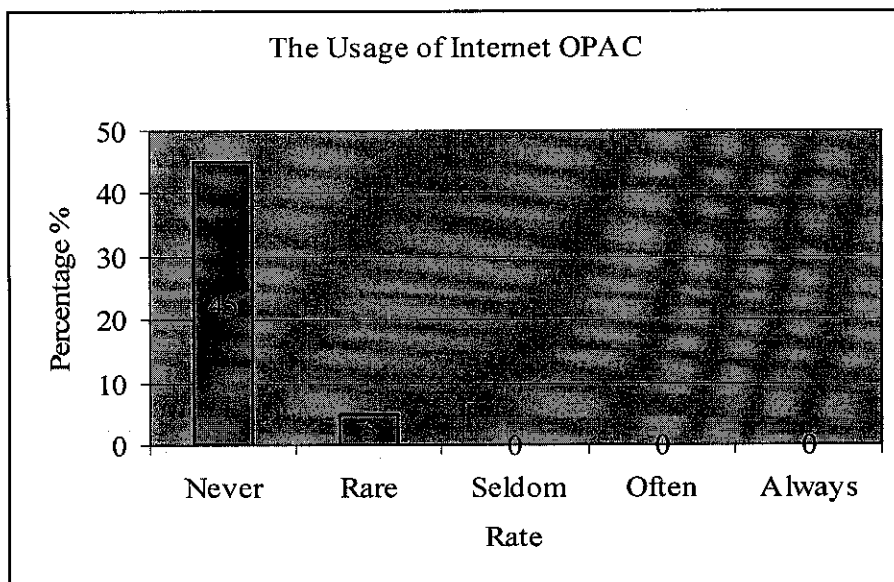


Figure 4.5– The Usage of Internet OPAC

Figure 4.4 above shows the usage of Internet OPAC by the respondents which are the lecturer and students. By looking at the bar graph, it shows that 45 of the respondents never use the Internet OPAC, 5 of them which is lecturer rare use the Internet OPAC.

From here, it shows that the Internet OPAC is not fully accessible by students because students do not know the existing of this Internet OPAC.

2. *The current library system in UTP give good services to the users?*

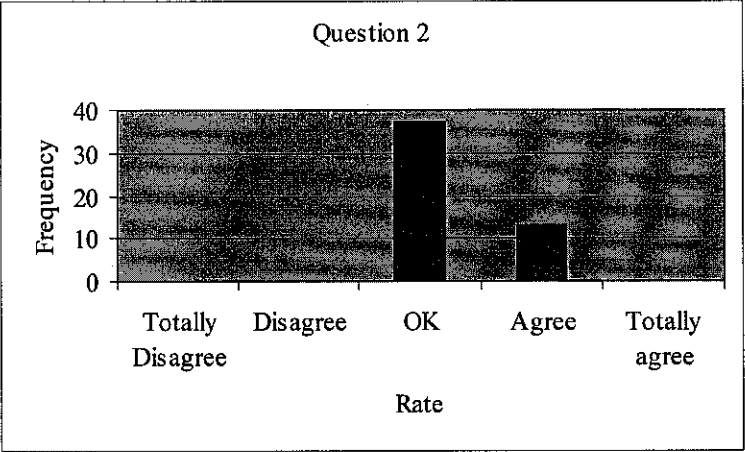


Figure 4.6 – Services of the current library system

Figure 4.5 above shows the feedback from the respondents about the services of current library system. Majority respondents saying that the current library system in UTP give good services to users.

3. *It is preferable to have an online library system at UTP in which you can access anywhere at anytime?*

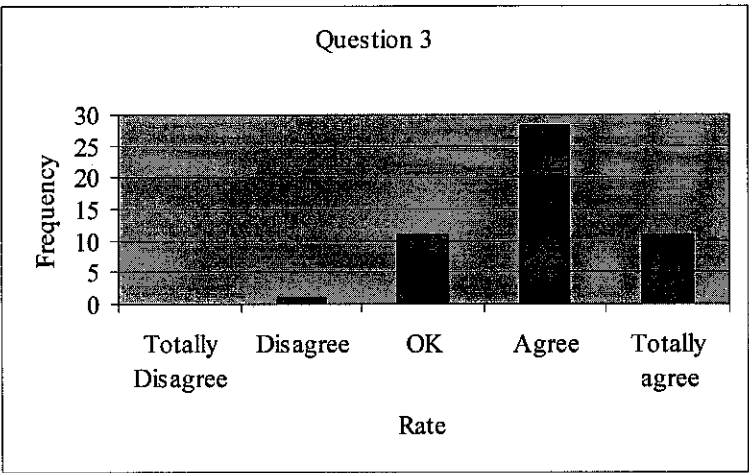


Figure 4.7 – The preferable to have an online library system

From the graph, 28 of user saying that they prefer to have an online library system in UTP. 11 of users totally agree with this online system, also 11 of them choose ‘OK’ for this questions.

4. *The online library system in UTP (book renewal and reservation online) is very important to you.*

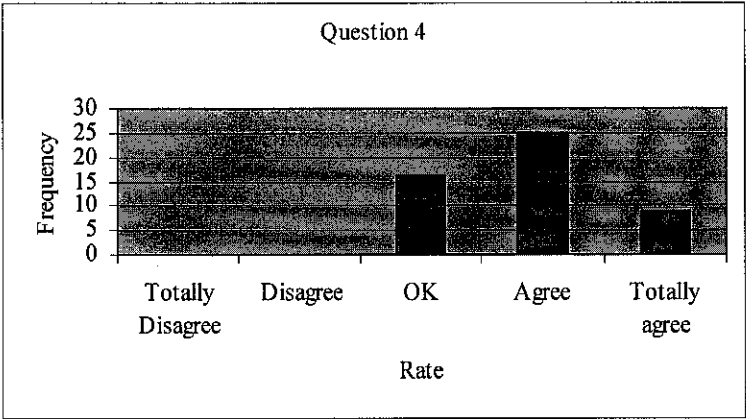


Figure 4.8 – The online important of online library system

Figure 4.7 shows the feedback of the respondent about the importance of the online library system. Majority of the users agreed and totally agree with this proposed system. None of the users disagree.

5. *Do you think that the UTP's library system needs enhancement?*

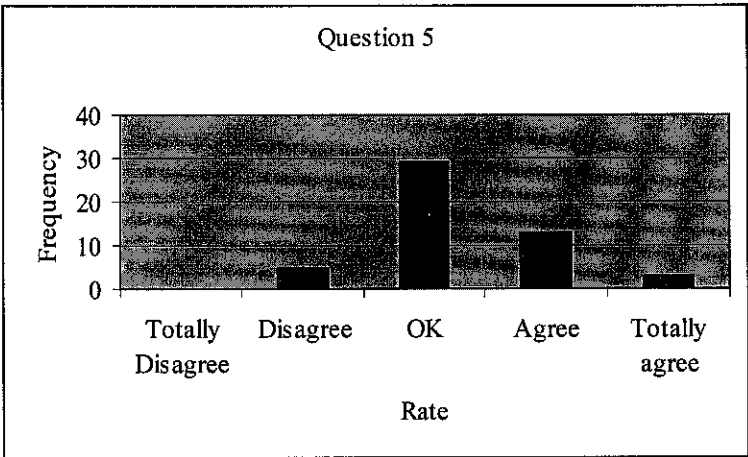


Figure 4.9 – the user’s view of enhancement of current library system

Figure 4.8 above shows the user’s view on the enhancement of the current library system. 90% of the respondents responded that the current library system should be enhance while only 5% responded that the current library system at the moments does meet their expectations and needs. It clearly indicates that users are looking forward for some improvements to the existing library system.

Based on the result that been obtained, it is surely that the current library system are not fully utilized by the UTP students and lecturer.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION OF STUDY CONDUCTED

A web-based library service is a trend libraries are taking full advantages of internet and web facilities. This potential for electronic libraries to play an intermediary role in support for group and enterprise-wide work activities is an important reason why commercial interest is growing around the product developments of document management systems, data warehouses, knowledge management systems, and collaborative workflow systems. Users are very happy by getting the information. This new mode of service is highly effective in special libraries rather than academic libraries.

This e-library system is aimed to assist students easy way to renew and reserved book via online system rather than do manually. It also allows students to check the books' status and receive notification of the due dates. This project is too stressed on the advantages of having the online system compared to current library system in UTP. Besides that, this online system allows the users to check their loan books and reservation current status. Moreover, users may be also provided with automatic due date alert and overdue remainders.

According to the research done, the current library system should be enhanced. Most of students and lecturer are agree with the suggested system. It clearly indicates that users are looking forward for some improvements to the existing library system.

Overall, the end product is intended to show the users the functionality of the proposed system. This is to stress on the advantages of having online library system compared to the current system.

5.2 RECOMMENDATION FOR FUTURE ENHANCEMENT

5.2.1 Future system enhancement

The following are some of the future enhancements that are recommended for the UTP E-Library System.

- Customize the module(s) so that it would better serve the users such as renewal module, reservation module, user status module and so on.
- Provide online reservation for meeting or discussion rooms.
- Provide online feedback for the users.
- Integrate with the UTP database.

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APPENDICES

Appendix I : Gantt Chart

Appendix II : Questionnaire for Interview Session

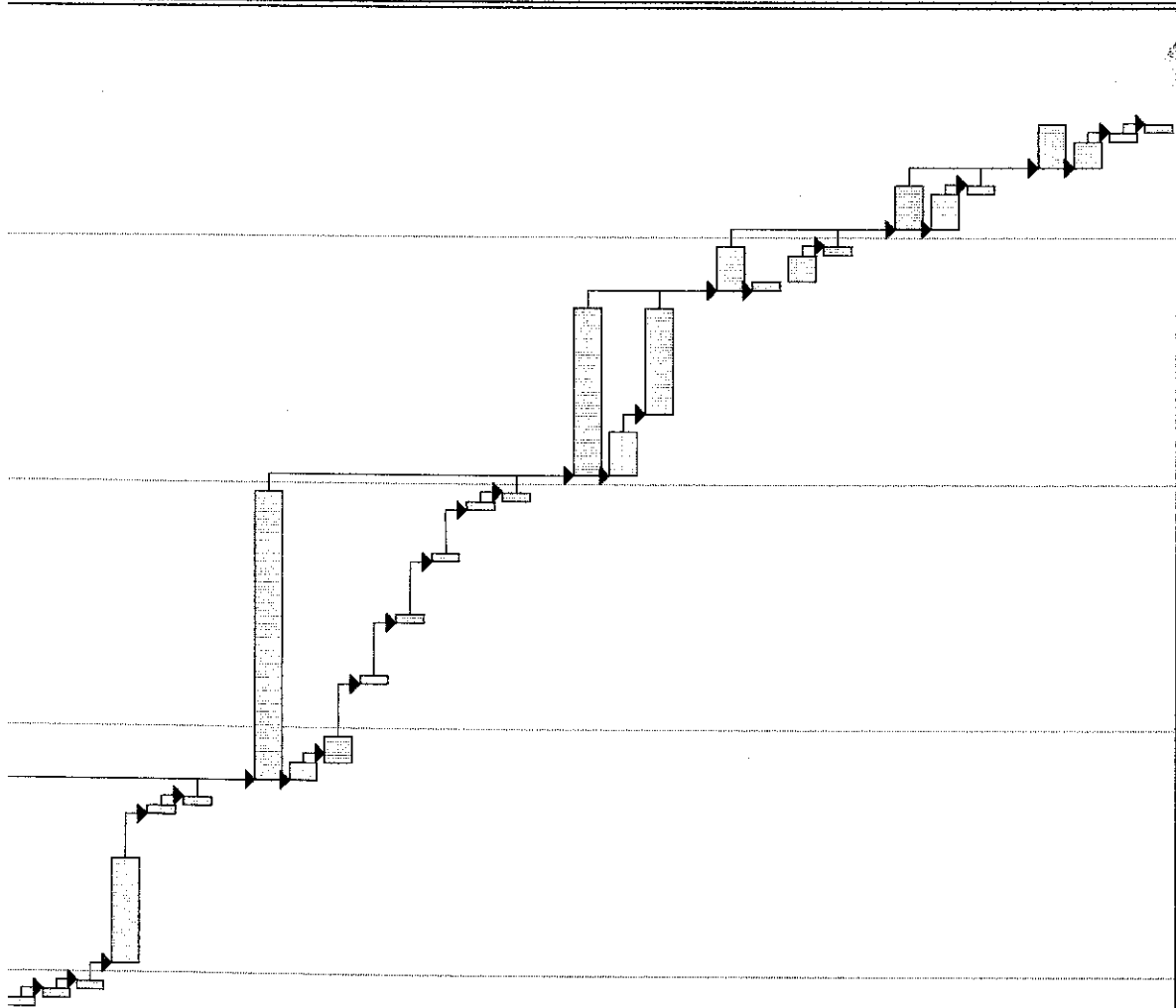
Appendix III : Questionnaire for User's Perspectives

Appendix IV : System Interface

- Administrator
- User

Appendix V : System Flow

4	1.3 Identify objective of the project	Wed 1/25/05	Wed 1/25/05
5	1.4 Research in subject matter	Thu 1/27/05	Thu 1/27/05
6	1.5 Submit preliminary report to the supervisor	Fri 1/28/05	Fri 1/28/05
7	1.6 Study previous report about e-library system	Mon 1/31/05	Fri 2/11/05
8	1.7 Conduct research	Thu 2/17/05	Thu 2/17/05
9	1.8 Re submit preliminary report	Fri 2/18/05	Fri 2/18/05
10			
11	2. Progress Report	Mon 2/21/05	Fri 3/25/05
12	2.1 Conduct need analysis	Mon 2/21/05	Tue 2/22/05
13	2.2 Interview librarian	Wed 2/23/05	Fri 2/25/05
14	2.3 Distribute Questionnaires to student and	Fri 3/4/05	Fri 3/4/05
15	2.4 System Design	Fri 3/11/05	Fri 3/11/05
16	2.5 Create Storyboard for the module	Fri 3/18/05	Fri 3/18/05
17	2.6 Prepare Progress Report	Thu 3/24/05	Thu 3/24/05
18	2.7 Submit progress report	Fri 3/25/05	Fri 3/25/05
19			
20	3. Development	Mon 3/28/05	Fri 4/15/05
21	3.1 Design interface using Dreamweaver	Mon 3/28/05	Fri 4/1/05
22	3.2 System Coding & Testing	Mon 4/4/05	Fri 4/15/05
23			
24	4. Documentation	Mon 4/18/05	Fri 4/22/05
25	4.1 Finalize Design	Mon 4/18/05	Mon 4/18/05
26	4.2 Prepare final draft	Tue 4/19/05	Thu 4/21/05
27	4.3 Submit final draft to supervisor	Fri 4/22/05	Fri 4/22/05
28			
29	5. Presentation	Mon 4/25/05	Fri 4/29/05
30	5.1 Prepare presentation materials	Mon 4/25/05	Thu 4/28/05
31	5.2 Final Presentation	Fri 4/29/05	Fri 4/29/05
32			
33	6. Project Dissertation	Mon 5/2/05	Fri 5/6/05
34	6.1 Finalize result & discussion	Mon 5/2/05	Wed 5/4/05
35	6.2 Binding	Thu 5/5/05	Thu 5/5/05
36	6.3 Submit project dissertation	Fri 5/6/05	Fri 5/6/05



Task

Split

Progress

Milestone

Summary

Project Summary

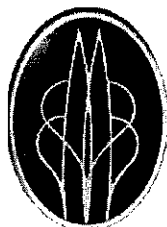
External Tasks

External Milestone

Deadline

due date?

9. If there is, how does it work? Can I know the rules and terms for borrowers?
10. What are the different services given to a different group of user? For instance, between student and lecturer



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INTERVIEW QUESTIONS (second part)

Interviewee: Mr. Muhamad Bin MD Haris
Interviewer : Azilah Hashim @ Shahrar
Date :9th March 2005
Subject : Enhancement of the UTP E-Library System

Objective(s) of the interview :

- Find out the current state of UTP library system
- To understand the operating of OPAC system
- Find out the requirement of newly proposed system (renewal book and reservation)

1. How does the OPAC system in the library work?
2. Does the OPAC covers only UTP's library records or it integrates with other libraries?
3. How does the management update the records for the OPAC system?
4. Does the OPAC able to generate a status of the book either it is on loan or on shelf?
5. There are a few websites that link to the library and OPAC system. However, there are not fully accessible by students. Why? Who has the privilege to browse it? Where can the user browse it?
 - <http://pww.utpnet.petronas.my>
 - <http://pww.petronas.com.my/edu/precise/index.htm>
 - <https://opac.petronas.com.my>
6. How does the registration process work?
7. What does the different between intranet OPAC and Internet OPAC?
8. Who control the database for the library?
9. What is the software used for it? Oracle or MySQL?
10. Who control the database for the library?

11. Can a student reserves or requests the book in advance with the current system?
If yes, how does it work?
12. How does the borrowing process work?



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FINAL YEAR PROJECT QUESTIONNAIRES

UTP E-LIBRARY SYSTEM

by: Azilah Hashim @ Shahar (IT/2333)

The objective is to conduct survey regarding the current library system in UTP from the user's perspectives. Please circle the appropriate option given based on the scale chart below.

1. Which type of users you are belong to?

☐ Student ☐ Lecture ☐ Others

2. How often do you use the intranet OPAC in your village/lab/office?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

Question 3 - 7

1	2	3	4	5
<hr/>				
Totally Disagree	Disagree	Ok	Agree	Totally Agree

3. How often do you go to library to use the Internet OPAC system in your village/lab/office?

1 2 3 4 5

4. The current library system in UTP give good services to the users?

1 2 3 4 5

5. It is preferable to have an online library system at UTP in which you can access anywhere at anytime?

1 2 3 4 5

6. The online library system in UTP (book renewal and reservation online) is very important to you.

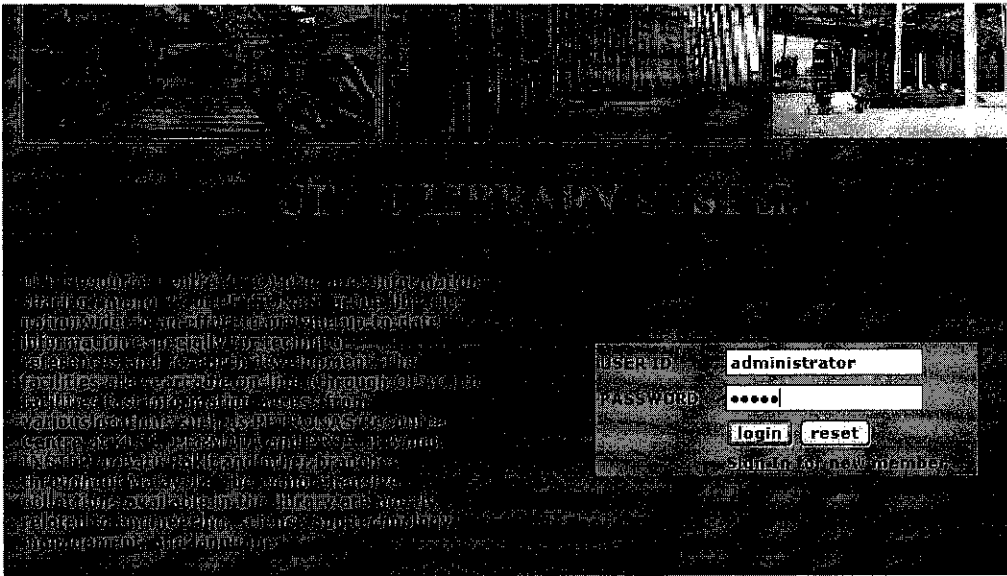
1 2 3 4 5

7. Do you think that the UTP's library system needs enhancement?

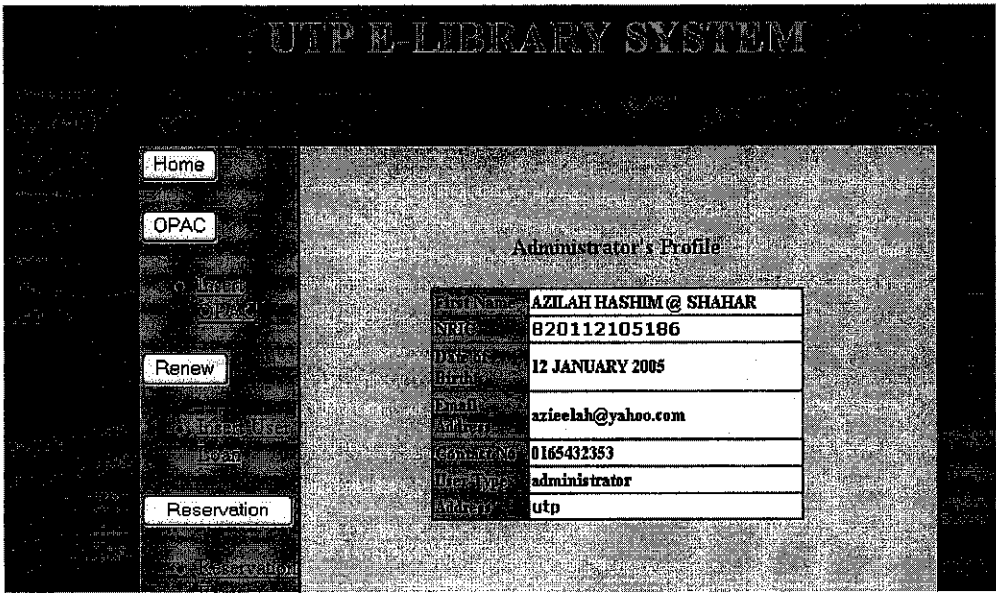
1 2 3 4 5

SYSTEM INTERFACE

1. Administrator



Main page



Administrator profile

UTP E-LIBRARY SYSTEM

Home

OPAC

Renew

Reservation

Item(s) Loaned

User ID	Item ID	Item Title	Author	Reserved Date	Due Date
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Submit

Reservation form

UTP E-LIBRARY SYSTEM

Home

OPAC

Renew

Reservation

Insert user's loan

User ID	<input type="text"/>
Item ID	<input type="text"/>
Item Title	<input type="text"/>
Author	<input type="text"/>
Reserved Date	<input type="text"/>
Due Date	<input type="text"/>

Submit Reset

Loaned book form

UTP E-LIBRARY SYSTEM

Home

OPAC

Renew

Reservation

Item ID: IPB105512

Item Title: My SQL

Author: Dittel and Dittel

Call Number: QA

Status: loan

Submit Reset

OPAC form

UTP E-LIBRARY SYSTEM

Home

OPAC

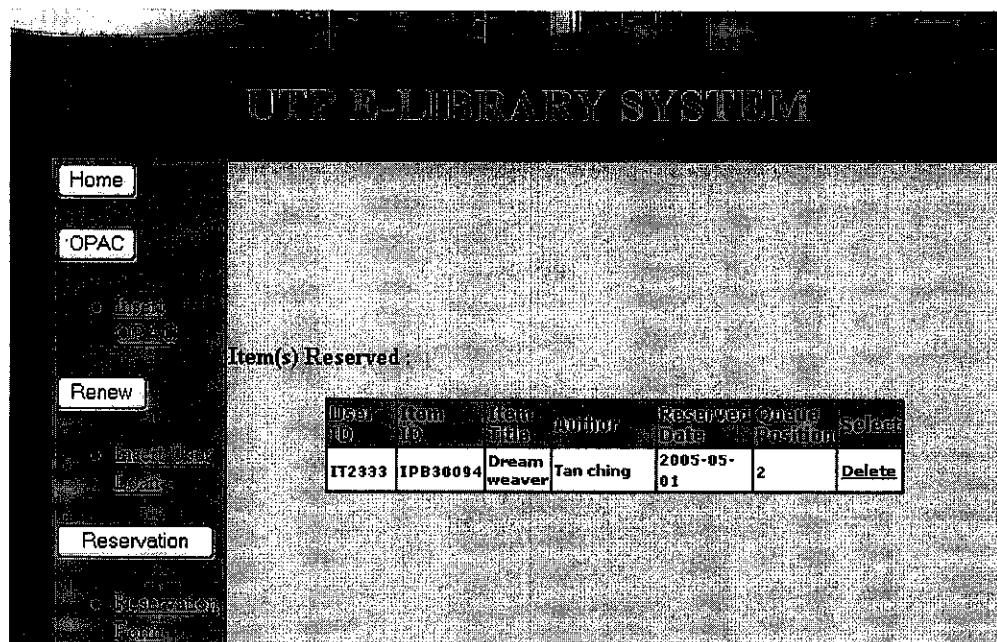
Renew

Reservation

Items Loaned

Select	User No	Item ID	Item Title	Author	Loan Date	Due Date
Delete	IT2333	IPB200424	Linux	John	2005-04-05	2005-05-04

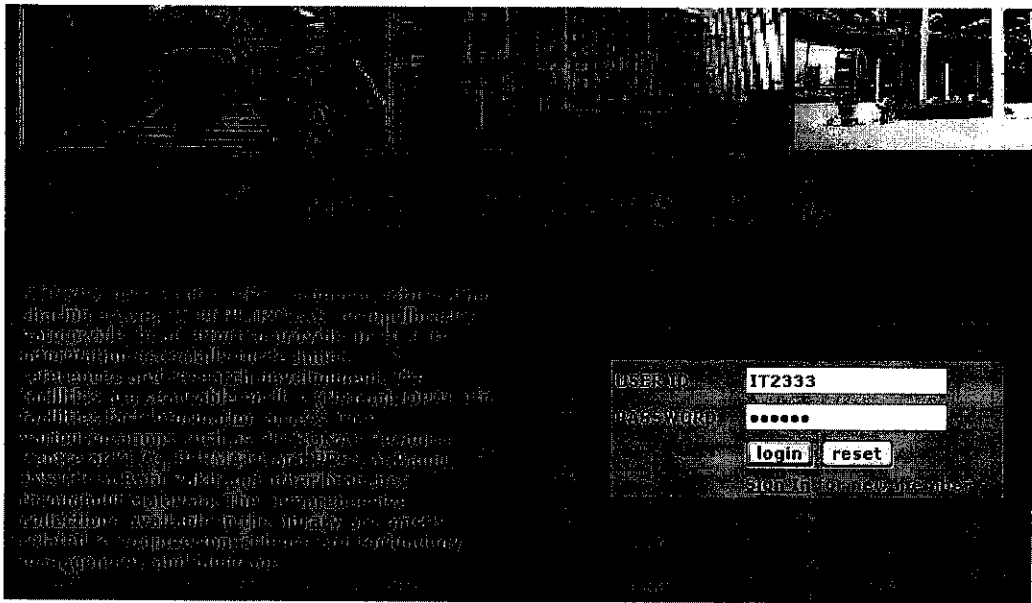
View user's loaned book



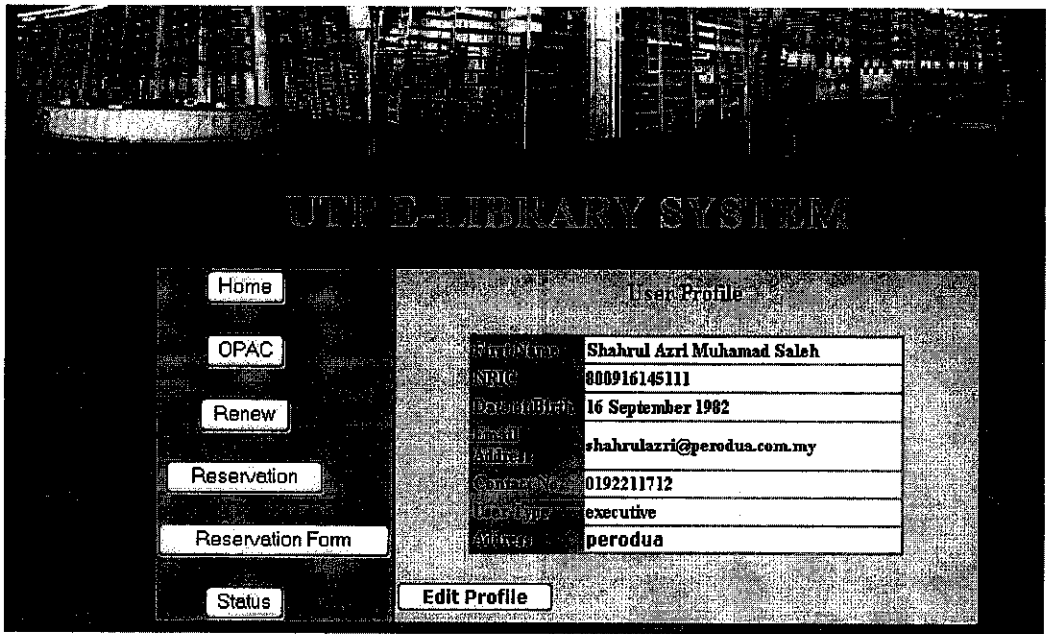
View user's reserved book

SYSTEM INTERFACE

2. User



Main page



User's Profile

UTP E-LIBRARY SYSTEM

User Profile

Full Name	Shahrul Azri Muhamad Saleh
NRIC	800916145111
Date of Birth	16 September 1988
Email Address	shahrulazri@yahoo.com
Contact No	0192211712
User Type	executive
Address	V4D

BACK submit

Edit User's Profile

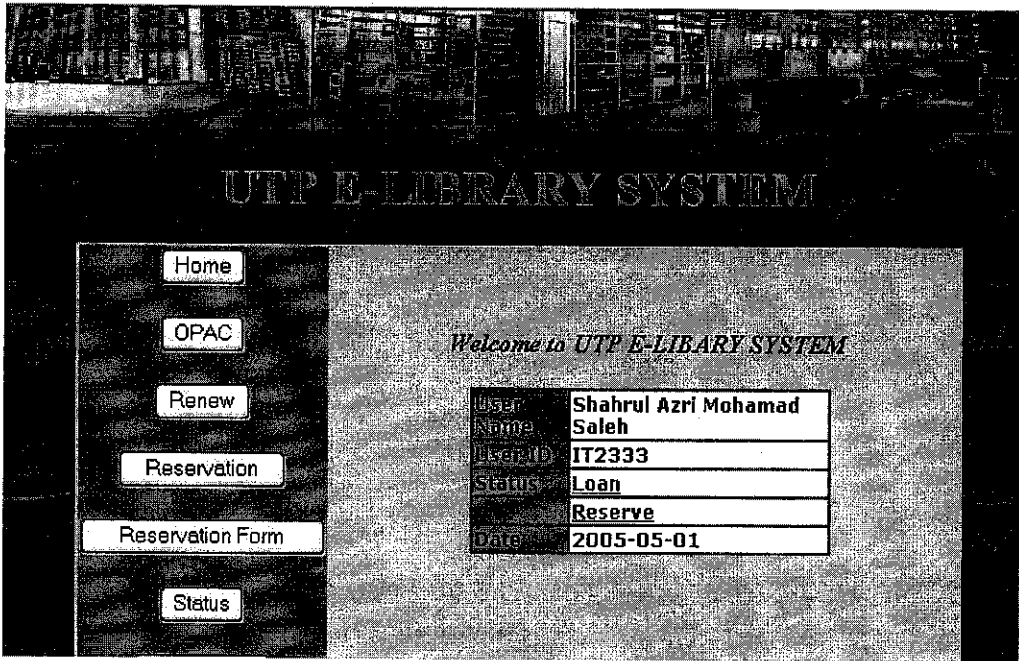
UTP E-LIBRARY SYSTEM

Please fill out your information below

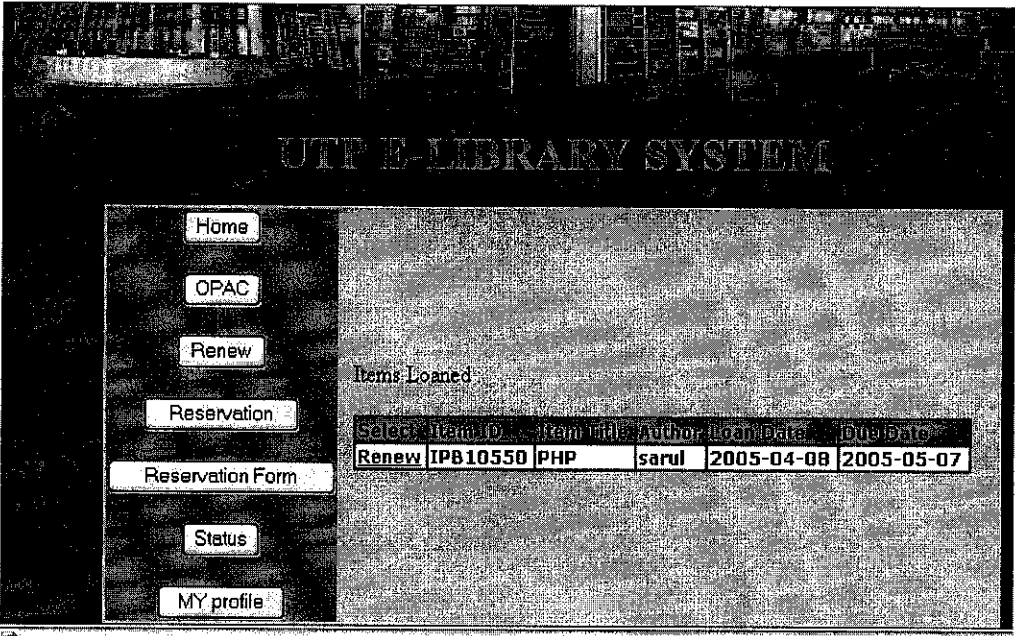
Full Name	
NRIC	eg :820112105186
Date of Birth	
Contact No	
User Type	Undergraduate <input checked="" type="checkbox"/>
Address	
User ID	
Password	

BACK Send Reset

Sign in for new member



User's Status



User's loaned or renewed book

UTP E-LIBRARY SYSTEM

Home
OPAC
Renew
Reservation
Reservation Form
Status
MY profile

Item(s) Reserved :

Item ID	Item Title	Author	Reservation Date	Queue Position	Select
IPB105501	MySQL	Deitel and Deitel	2005-05-01	1	cancel

User's reservation view

UTP E-LIBRARY SYSTEM

Home
OPAC
Renew
Reservation
Reservation Form
Status
MY profile

Item ID	Item Title	Author	Reservation Date
IT2333			2005-05-01

Submit

Reservation form

System Flow of The E-Library

